

FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 6144
WILCOX FARMS, INC.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST 6144. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the state of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (Revised Code of Washington [RCW] 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the state include procedures for issuing permits (Chapter 173-216 Washington Administrative Code [WAC]), and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix C--Response to Comments.

GENERAL INFORMATION	
Applicant	Wilcox Farms, Inc.
Facility Name and Address	40400 Harts Lake Valley Rd S Roy, WA 98580
Type of Facility	Chicken Egg Farm, Milk Processing Plant, Egg Processing, Warehousing, Dairy Cattle, Beef Cattle (not confined)
Type of Treatment:	Facultative lagoon aerated for odors followed by land application
Discharge Location	Approximately 440 acres in Sections 1, 12 and 13 in Township 16N, Range 2E and Sections 6, 7, 8, 17 and 18 in Township 16N, Range 3E <u>Approximate center of land application site located at:</u> Latitude: 46° 52' 57" N Longitude: 122° 28' 35" W
Contact at Facility	Mr. Ken Hooper, Director of Facilities and Equipment Address: (same as facility location, above) Telephone #: (360) 458-6906 Fax #: (360) 458-6950

The facility is located as shown in Figures 1 and 2. The application area is bordered by the Nisqually River on the west, and Harts Lake and Little Harts Lake on the northeast. Harts Lake drain (or Harts Creek) goes through the site draining Harts Lake into the Nisqually River below the dam. Horns Creek drains into Harts Creek above the point of confluence of the Nisqually River and Harts Creek.

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Figure 1. General Vicinity Map.

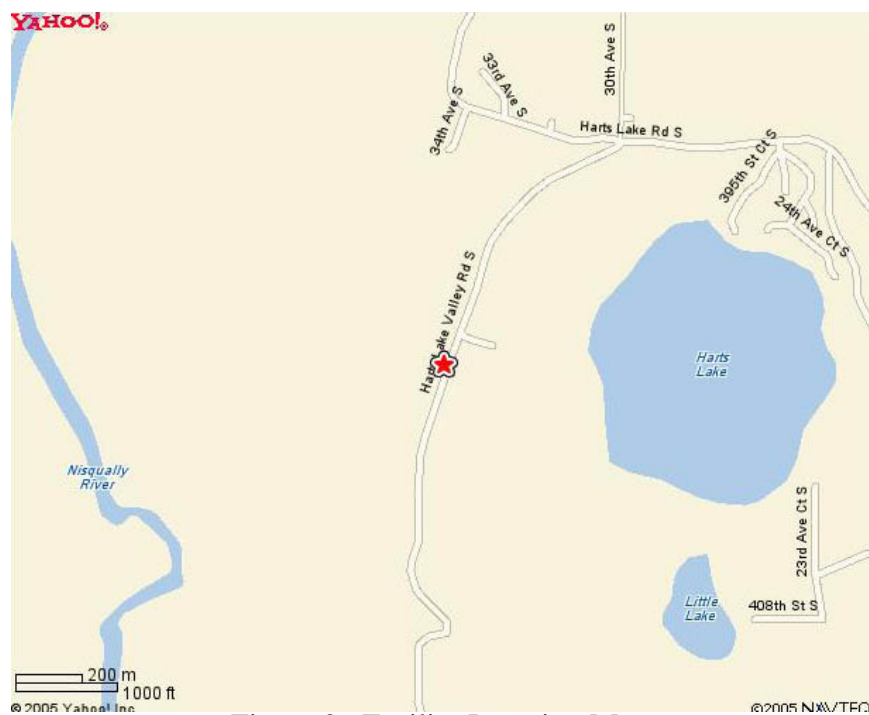


Figure 2. Facility Location Map.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

Wilcox Farms, Inc. is located in Roy, Washington. Operations at the facility currently include poultry operations, livestock services, milk processing, whole eggs and liquid eggs processing, forest products gathering, and crop growing. The facility used to have dairy operations which is currently not active; however, it is possible that the dairy operation may resume in the future.

The approximately 1,800 acre facility is located along the north and east bank of the Nisqually River in Pierce County. The farm also includes some land on the west bank in Thurston County, but this land is not used for any industrial or agricultural operations at this time. Harts Lake and Little Harts Lake border the farm on the east and north.

HISTORY

Wilcox Farms, Inc. was originally established in 1909 by Judson and Elizabeth Wilcox. The family originally purchased about 240 acres in Roy, Washington by Harts Lake. After moving to the Roy property, the family struggled financially selling milk, chickens, and vegetables to local logging camps. After about ten years, Judson and Elizabeth began to take courses from Washington State University to learn about raising poultry. The original chicken flock started with 1,000 birds. Half of this flock died the first night and approximately 100 of the remaining chickens turned out to be roosters.

In 1931, Judson's son, Truman, joined the family partnership. In 1940, the chicken flock grew to about 5,000 birds and a few beef cattle were raised as well. The farm entered the dairy business in 1961 when Jim, one of Truman's sons, returned to the farm after attending the University of Puget Sound. In 1965, Barrie, Truman's other son, took over the management of the poultry operations.

During the 1970's, the farm began marketing their products. In 1969, the farm began processing and packaging its own eggs in a newly built Egg Plant. In 1973, a Milk Processing Plant was completed. Originally, the milk plant processed 10,000 gallons per week. This volume of milk can now be processed in two hours.

Following Truman Wilcox's death in 1981, his sons, Jim and Barrie Wilcox, assumed the family business. Now the original Roy, Washington farm has grown to 1,800 acres. There are over 1.25 million laying hens and pullets, a shell egg processing plant, and a liquid egg processing plant. The milk processing division now handles about two million gallons of milk per month. Wilcox products are distributed in Wilcox trucks from the California border to the North Slope of Alaska.

In 1975, a feed mill was purchased in Roy, Washington to make the farm self sufficient in feed manufacturing. Now the feed division handles approximately 55 train cars per month. The farm expanded to Moses Lake, Washington in 1992, with 500 acres and three-100,000 bird lay houses, as well as an in-line processing plant. Other sites include a 13-acre milk plant facility in Cheney, Washington which was opened in 1997, and from 1999 to 2004, Wilcox Farms expanded operations to purchase dairies in Salem, Eugene, and Aurora, Oregon and a depot in Medford, Oregon.

INDUSTRIAL PROCESSES

The facility's operations comprise of poultry operations, livestock services, milk processing, whole eggs and liquid eggs processing, forest products gathering, chicken manure composting, and crop growing. Figure 3 provides a schematic flow diagram of the processes which occurs at their facility.

Poultry and Egg Production

Leghorn hens (for white eggs) and Hybrid Rhode Island Red hens (for brown eggs) are bred for egg laying and processing. Approximately 800,000 laying hens and 425,000 pullets are raised at the farm. Pullets are raised in "brooder" houses for five months until they begin laying and are moved to a modern, environmentally controlled laying house. Hens will lay eggs for about 2.5 years after which they are sold to slaughterhouses for poultry products.

Currently, most layer hens are housed in new style houses. The new style lay-houses consist of a two-story structure with chickens housed in rows of cages on the top floor and wastes accumulating on a concrete slab in the bottom floor. The wastes in the new style houses accumulate for the entire 106 week laying period. At the end of the laying cycle, the birds are removed from the houses, the cages are cleaned using compressed air, and manure is shipped off site or composted at the chicken manure composting area.

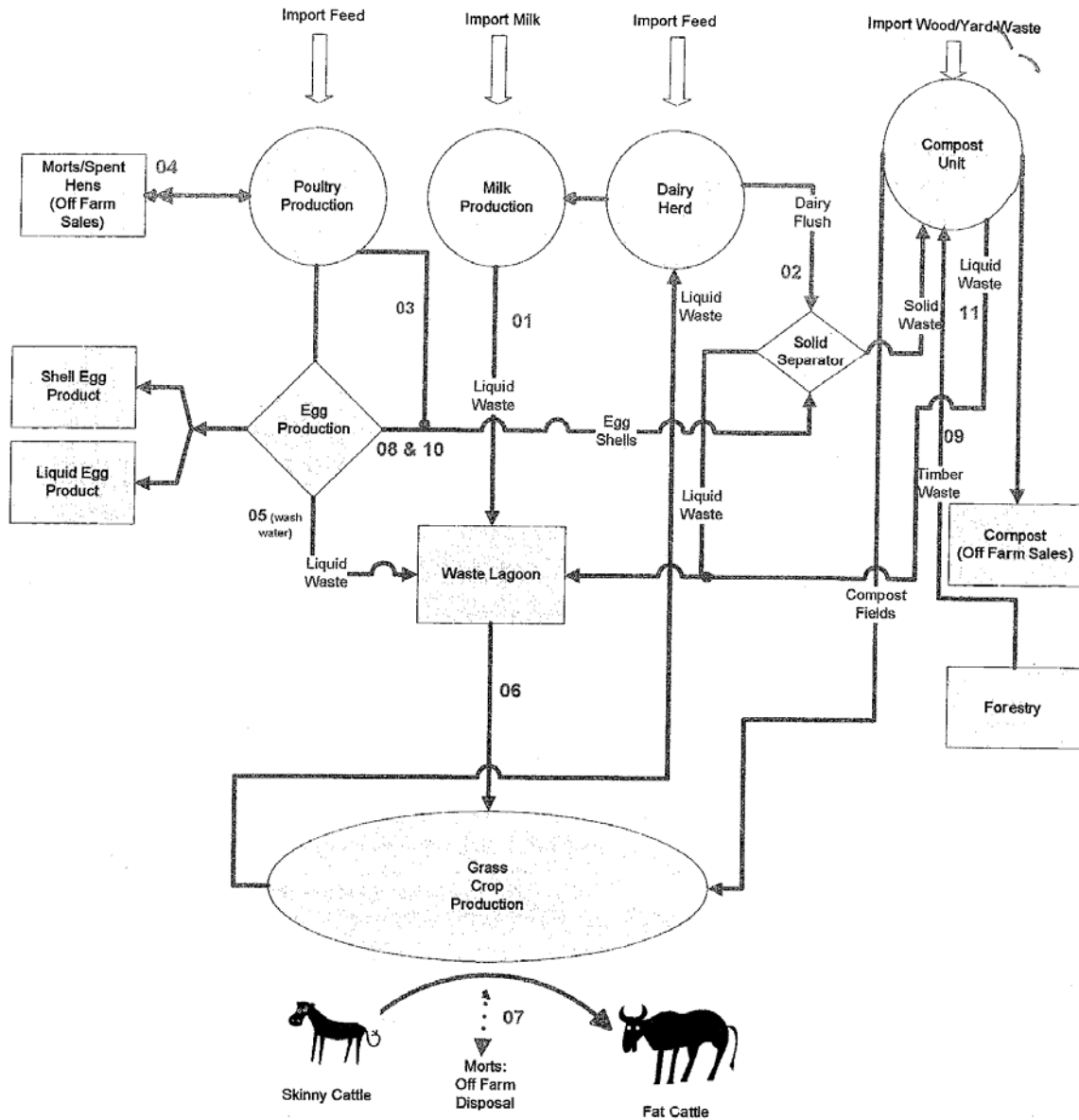
Most chickens consume about 1/5 pound of feed each day. Combined, hens and pullets eat over 86 tons of feed each day. To meet consumer demands, Wilcox has a high grade feed consisting of flax seed, which promotes eggs high in Omega 3 which is fed to a special flock of birds. More than 770,000 eggs are gathered each day (5,400,000 per week). About 163,800 (13,650 dozen) eggs are processed each hour. Eggs are packaged for grocery and food service customers in Washington, Oregon, Alaska, Montana, Idaho, and Canada.

Egg Plant Operations

The farm produces and processes whole eggs and liquid eggs. Eggs are produced in the lay houses discussed above. Eggs are transported to the Main Shell Egg Plant for processing. Processing at the Main Shell Egg Plant consists of washing, rinsing, oiling, candling, grading, and packaging. Eggs are then transferred to the cold storage facility where they are stored and prepared for delivery. Liquid waste from the Main Shell Egg Plant is discharged to the surge pond. The egg collection room at the individual lay houses are washed daily and the wash water is stored, pumped and transported to the surge pond. Eggs are no longer washed in the lay houses.

Wilcox also added an egg processing (Egg Breaking) plant in 1992. This facility provides over 150,000 pounds of liquid eggs per week to bakeries and food service operations. Eggs are supplied to the Egg Breaking Plant from the laying houses and the shell egg plant discussed above. Eggs are washed, rinsed, broken, and packaged under direct U.S. Department of Agriculture (USDA) supervision. Packaging into bulk containers is completed in a sterile environment. Cleanup of machinery and the facility consists of manual flushing and rinsing of egg handling and washing machines, followed by an automated Clean-In-Place (CIP) system with a final wash of floor and piping surfaces. The CIP system consists of wash and rinse cycles which include acidic and alkaline solutions.

The final rinse water from each piece of equipment is stored in a single heated tank to be used as the pre-rinse water for the following CIP processes. In addition, the acid and alkaline solutions are regenerated during subsequent CIP cycles. The only CIP wastewater routinely generated is the used pre-rinse cycle water from each piece of equipment. All wastewater generated in the egg breaking facility is discharged to a tank prior to final discharge into the main pond (discussed earlier). Solid waste generated consists of egg shells that are separated from the liquid waste in a centrifuge. Stormwater from the roof is collected separately and discharged to Harts Creek near the point where it crosses the county road.



WASTE DISCHARGE PERMIT – SECTION C. ITEM 2a
Production Process Flow Diagram.
(Numbers Refer to
Waste Stream ID in Section C. Item 1)

Figure 3. Industrial Operations Schematic Diagram.

Milk Processing

The milk processing plant processes approximately 500,000 gallons of milk weekly. All raw milk is currently shipped in from dairies off-site. The finished products that are shipped to customers from the farm range from a wide variety of milks, creams, cultured products and juices.

The milk processing facility is located north of the dairy barns. Raw milk produced off-site is delivered via tank trailer trucks (tankers) to the north of the facility. Milk is pumped from the trucks into one of the four holding silos. The storage silos and some of the in-plant stainless steel piping and holding tanks are served by an automated CIP cleaning system that discharges to the sump area at the north side of the milk processing plant. Tankers use the pumping area to wash their tanks after delivering the milk to the plant. The pumping area sits over a concrete paved tarmac that collects stormwater, wash water, and spilled product. Raw milk storage tank cleanup water and floor drain waste from the cooler are diverted into the stormwater collection system at the milk processing plant. The stormwater collection system discharges into the surge pond.

Milk processing consists of pasteurization, homogenization, cream separation, mixing with other ingredients (for egg nog and chocolate milk), packaging, palletization, and cold storage. The machines and conveyors used in these processes are washed with alkaline detergents and acid rinses. The waste streams converge at an enclosed concrete sump at the north side of the dairy.

The stored milk products are loaded onto tractor trailer trucks from the loading docks at the west side of the dairy plant. The loading area consists of a gravel parking area with a concrete apron adjacent to the loading docks. The entire parking and loading area is drained by a stormwater collection system that drains into the surge pond. In addition to the packaged milk products, bulk separated cream is stored in a silo at the south corner of the milk processing plant for delivery to other off-site processing plants.

Chicken Manure Composting Unit

The farm previously operated a chicken manure composting unit. The operation began circa 1999-2000 and was approved by both the Department and the Tacoma-Pierce County Health Department to substantially reduce the nitrogen loading to the land application fields. The composting operation was identified as a source of extreme nitrate and total dissolved solids contamination in the groundwater. The composting unit is in the process of shutting down. The solid waste discharge permit will be extended only long enough to finish utilizing the hog fuel feedstocks already present at the site. It is anticipated that this process will take a least one year. Once the compost facility is decommissioned, the existing pad will be inspected and repaired. The pad will be converted for use as a raw manure handling facility. The raw manure will be shipped to other facilities. Currently, there are arrangements to ship the raw manure to organic farming operations east of the Cascade Mountains.

Vehicle Maintenance Operations

The farm has a vehicle repair and maintenance area located east of the farm offices. The farm contracts with an independent vehicle leasing, maintenance and repair company (Penske) for operation and maintenance of its fleet. The farm contracts with another company for vehicle fueling and yet another company for vehicle washing. Waste generated from repair and maintenance operations is either hauled off-site, recycled, or used for heat generation. The maintenance shop furnace is designed to burn used motor oil. Used antifreeze is processed on-site and reused in fleet and service vehicles. Floor washings from the shop drain to an oil/water separator unit behind the farm offices. This unit removes sludge and oily waste prior to discharge to a pond system behind the offices. Over-the-road vehicles are washed on

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pavement south of the milk-processing plant. The washwater is contained and discharged to the lined, main lagoon system. There is a wash station adjacent to the maintenance shops for washing company cars. Washwater is discharged to a pond behind the farm offices via a pipe. The pond eventually drains into the old Duck Pond system. Manure-contaminated vehicles are washed at the solids separation unit northeast of the dairy in the valley. This washwater goes through a sand trap, followed by a solids separator prior to discharge to the main lagoon.

Crop Production Operations

Grass, alfalfa, corn, and berries can be grown at various fields at the land application site. Currently, only grass and berries are grown at the farm. Land application of wastewater does not occur in fields where berries are grown. Grass grown is currently not harvested and there are cattle which are allowed to graze on the grass during the growing season.

TREATMENT PROCESSES

Currently, all nutrients in the liquid waste stream is first collected at the various industrial operations, transported to a lined surge pond and then to a 33 million gallon lined, main holding lagoon. The main lagoon is a concrete, plastic-lined wastewater lagoon sized to hold all wastewater generated during the non-growing season. The lagoon has six surface aerators sized and designed to control foul odors during summer months. Some biological treatment is undoubtedly occurring in the surge pond and in the lagoon but there is no measure of how much. There has never been an Engineering Report done to quantify how much treatment is occurring or how to maximize the amount and efficiency of this treatment. The Permittee may desire to investigate this issue in the future when evaluating different treatment options as part of the requirements of this permit. The primary mechanism of wastewater treatment is through the soil and plant uptake system. Land application of wastewater is conducted only during the summer growing season.

Solid waste comprised of chicken manure and hog fuel is composted and sold off-site. The chicken manure used to be applied directly to the fields and this practice has not occurred on a regular basis since 1999. The existing composting operation has not been working as anticipated and has led to high level contamination of the groundwater of nitrate/nitrite and total dissolved solids in the area surrounding the compost, and source material piles.

DISTRIBUTION SYSTEM (SPRAYFIELDS)

Wilcox Farms land applies wastewater from milk processing and egg production to about 350 acres divided into approximately 10 distinct spray fields. An additional 90 acres are in non-irrigated pastures which are not sprayfields. Beef and/or dairy livestock typically graze selected fields during the growing season. In 2003, Wilcox maintained a dairy herd of about 140 animals. A commercial composting facility operates in the south portion of the farm. In 2003, Wilcox Farms land applied 48.9 million gallons of wastewater to onsite agricultural fields. Poultry manure has been land applied onsite, but over the last 10 years the amount applied has been substantially reduced and currently most is being either composted or transported directly offsite. Composted manure, which used to be generated, was sold to customers and delivered to offsite locations.

In the past, high wastewater application rates and leakage from unlined wastewater ponds resulted in elevated concentrations in groundwater for total coliform bacteria, nitrate + nitrite, and total dissolved solids. The amount of nitrogen applied to onsite fields has decreased from nearly 450,000 pounds in 1996 to 160,000 pounds in 2003.

GROUND WATER

HYDROGEOLOGY

Wilcox Farms, Inc. has made a good initial effort to characterize the hydrogeology and monitor the groundwater quality of the site. However, the conditions of this permit will require that the facility conduct additional tasks that should complete the hydrogeologic characterization of the site and finalize the groundwater monitoring network.

The surficial geology of the site is shown in Figure 4. Alluvial deposits from the Nisqually River and Harts Lake drainage underlie most of the flat-lying valley floor where wastewater is land applied. Ice-contact glacial sediments, including outwash deposits, underlie the surrounding upland, and in turn, overlie the Mashel Formation, continental sedimentary rocks of the Miocene Epoch. Two aquifers are identified in the area: (1) a shallow, unconfined aquifer underlying the valley bottom that consists of alluvial and outwash deposits and (2) a deep aquifer in the lower portions of the Mashel Formation. The shallow unconfined is the target aquifer for the groundwater monitoring network at the site. The pattern of groundwater flow in the shallow aquifer is shown in Figure 5. In general, groundwater flow is toward the Nisqually River.

GROUNDWATER MONITORING NETWORK

The groundwater monitoring network consists of 14 on-site monitoring wells. The location of these wells are shown in Figure 6. Eleven monitoring wells are completed in the shallow unconfined aquifer. Two wells (MW-5, and MW-11) are upgradient wells that may be used to define background groundwater quality of the shallow aquifer at various locations on the farm. Three wells (MW-3, MW-4 and MW-7) are downgradient of land application field. One well (MW-2) is downgradient of unlined waste storage ponds. Three wells (MW-8R, MW-9R, and MW-10R) are downgradient of the Compost Area. Three monitoring wells (MW-12, MW-13 and MW-14) are completed in the uppermost water-bearing zone near the main lagoon situated on the upland east of the farm. MW-1 is screened at a depth interval of 25 to 29 feet beneath a 14-foot-thick layer of silt and peat that limits the downward movement of contaminants from the ground surface to the zone where the well is screened. With the completion of the hydrogeologic characterization of the site additional monitoring wells will be installed downgradient of the applications near the farm boundary to monitor compliance with the groundwater quality standards.

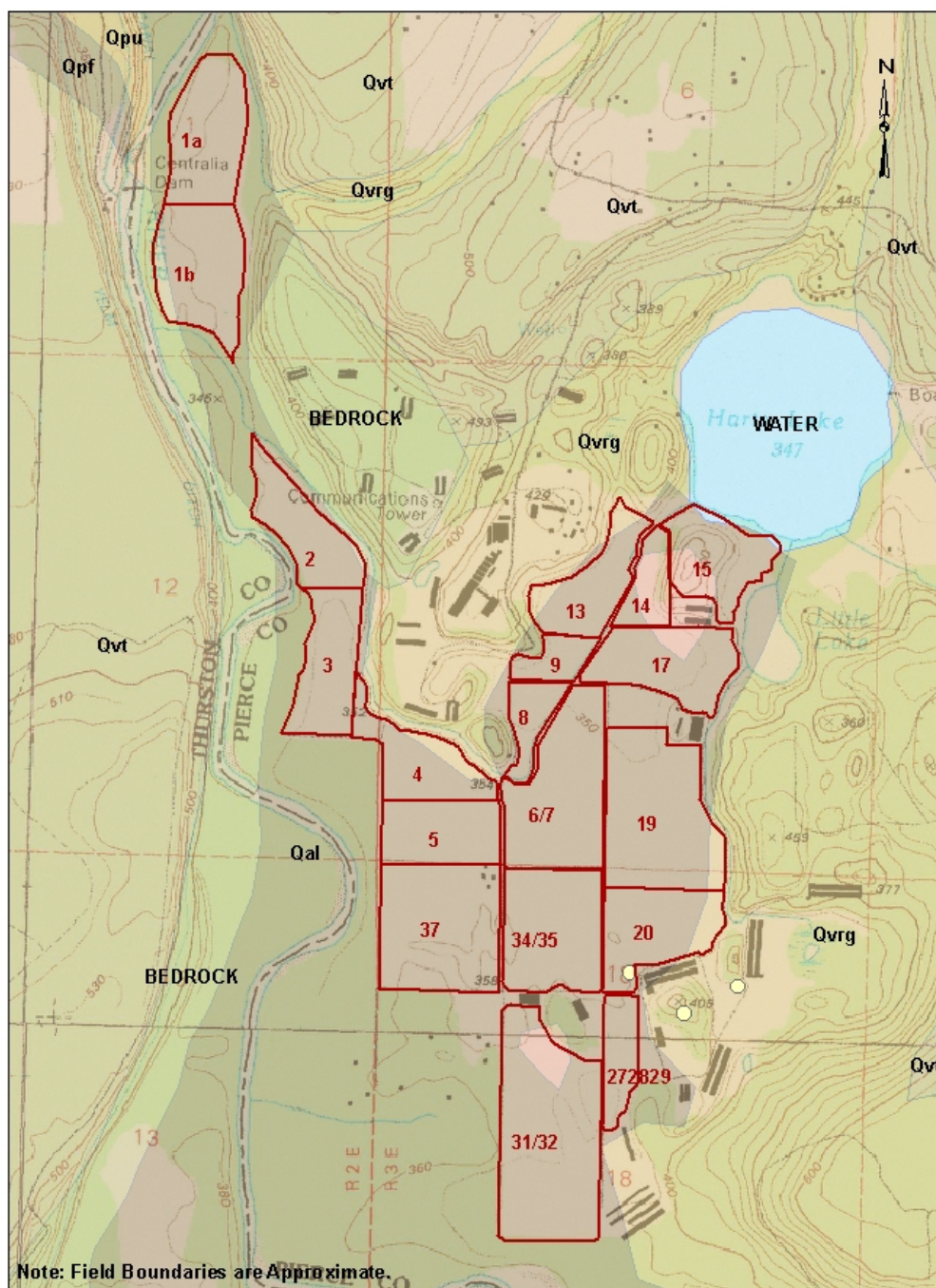
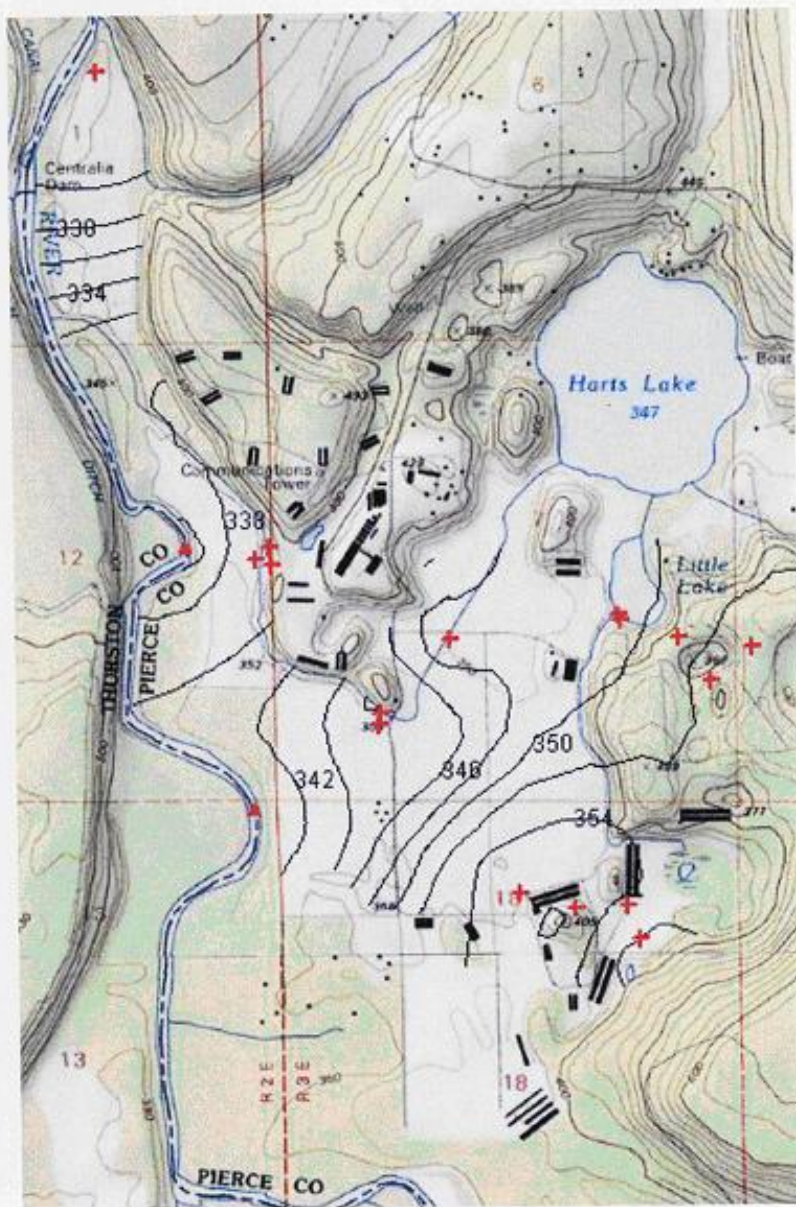


Figure 4. Wilcox Farms Surficial Geology.



Water level contour map from water levels collected June 1999. Two control points were placed along the mapped channel of the Nisqually River. Contour interval is 2 feet. Water level elevations are summarized in Table 1.

Figure 5. Groundwater Contour Map (source: TESI, 2005).

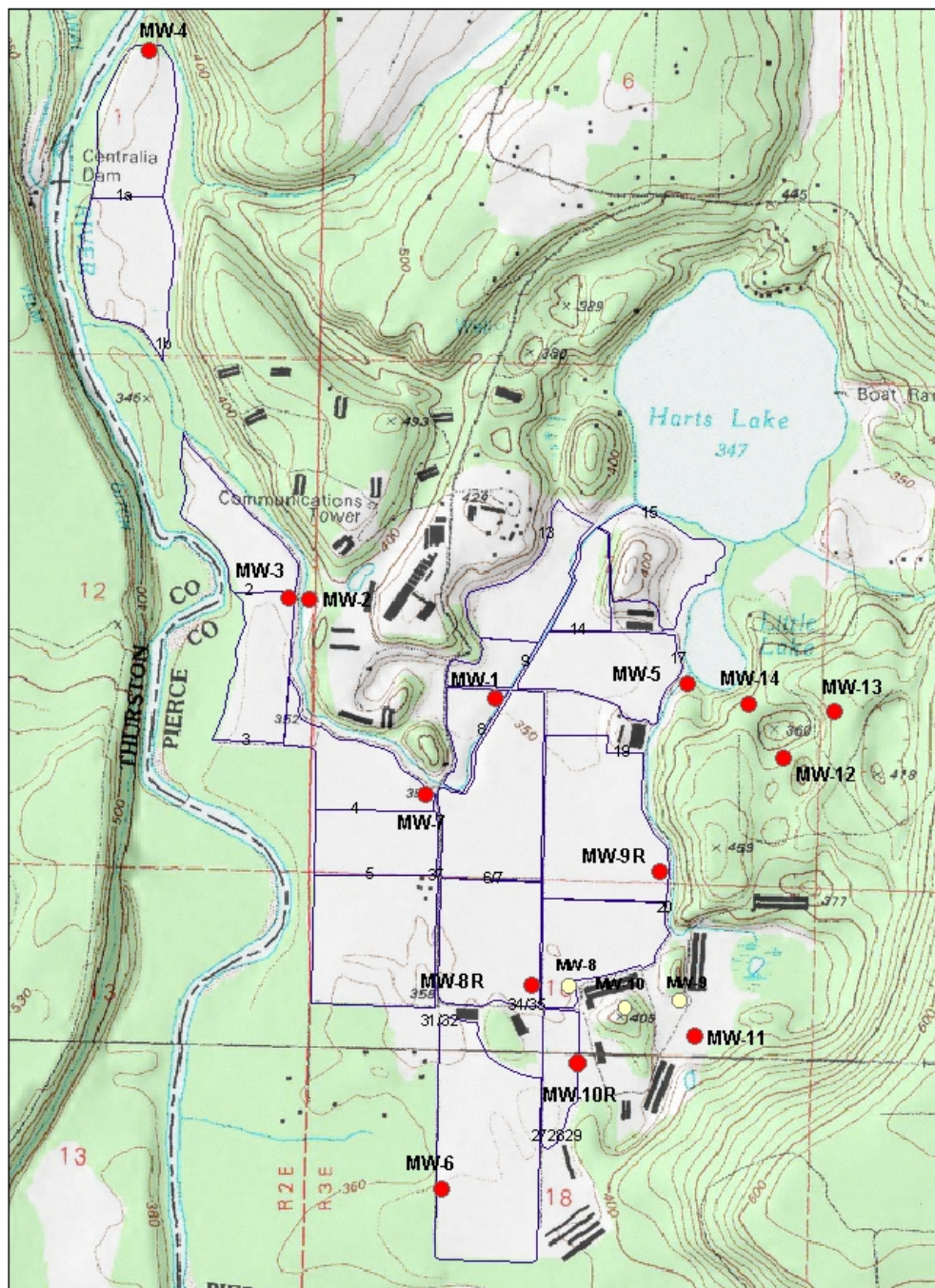


Figure 6. Wilcox Farms Monitoring Well Locations.

GROUNDWATER QUALITY

The average groundwater quality results for each monitoring well for the period 1995-2005, are shown in Table 1. The primary contaminants of concern in groundwater at Wilcox Farms are nitrogen species (nitrate, nitrite, ammonia and organic nitrogen), total dissolved solids, and total coliform bacteria. The concentrations of these parameters in groundwater vary spatially and over time. A number of factors contribute to the complexity of the groundwater quality and include variability of wastewater application rates, possible leakage from unlined ponds, variability of soils and aquifer properties, variable recharge rates, and fluctuating hydraulic boundaries like the Harts Lake drain and the Nisqually River.

In general, groundwater quality beneath the facility has improved over the last 10 years as a result of wastewater handling and wastewater application improvements by Wilcox Farms. Total coliform detections and nitrate concentrations have decreased significantly over the last 10 years in a number of monitoring wells (2003 Annual Farm Report). However, elevated nitrate and TDS concentrations in groundwater remain an issue beneath parts of the facility.

The most serious groundwater contamination appears to be in Compost Area at the south end of the facility. Total dissolve solids (TDS) and nitrate+nitrite-N concentrations are substantially greater than the groundwater quality criteria of 500 mg/L and 10 mg/L, respectively, with TDS concentrations exceeding 2,500 mg/L and nitrate+nitrite-N concentrations exceeding 375 mg/L.

A second issue is the effect of the current wastewater applications on groundwater quality. Nitrate-nitrite-N concentrations for three wells downgradient of land application fields are shown in Figure 7. Although nitrate+nitrite-N concentrations generally declined from 1995 to 2002, they are still above or close to 10 mg/L. In addition, in 2003, nitrate+nitrite-N concentrations increased abruptly in MW3 and MW4 presumably due to wastewater applications. These data suggest that current wastewater applications are exceeding agronomic rates. Nitrogen loading targets will be reexamined and revised accordingly for this permit.

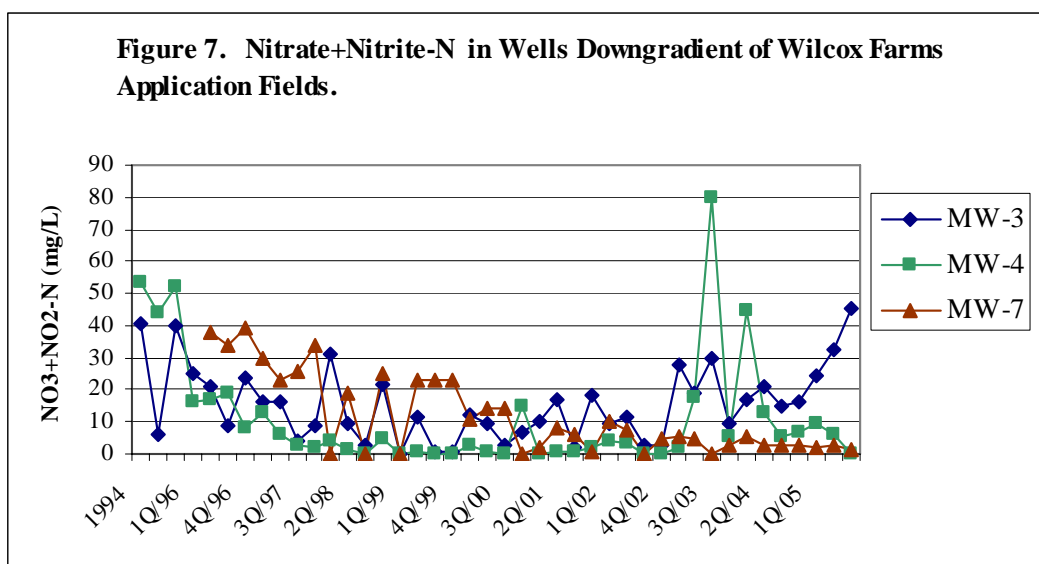


Table 1. Groundwater monitoring well summary of data from 1995-2005. Average values are reported.

Parameter	MW 1	MW 2	MW 3	MW 4	MW 5	MW 6	MW 7	MW 8	MW 9	MW 10	MW 8R	MW 9R	MW 10R	MW 11	MW 12	MW 13	MW 14
pH (s.u.)	6.71	6.79	6.83	6.87	6.80	6.63	6.73	6.40	6.09	6.52	6.64	6.08	6.09	6.31	6.68	6.75	6.78
Conductivity (milliseimens/cm)	0.25	0.87	0.78	0.63	0.42	0.20	0.52		1.15	0.22	1.15	2.16	3.74	0.96	0.15	0.17	0.18
Total Coliform (cfu/100 mL)	40	46	44	7	25	43	0	15	0	0	2	268	40	0	0	0	0
NO ₃ /NO ₂ (mg/L)	0.2	4.4	14.8	8.3	0.0	2.0	12.2	8.0	0.0	5.5	66.4	23.8	272.5	5.11	1.0	2.2	2.0
TKN (mg/L)	3.1	17.6	1.7	0.7	0.7	0.3	0.3	0.6	2.8		0.2	2.3	0.4	2.4	0.2	0.2	0.5
TDS (mg/L)	170	541	364	245	269	120	357	633	936	170	729	1472	2023	509	134	139	132
Fe ²⁺ (mg/L)	6.3	0.4	0.3	0.3	2.7	0.4	0.5	7.8	1.3	0.0	0.4	0.2	0.2	8.1	10.3	0.0	0.0
Total Iron (mg/L)	11.8	3.6	0.1	0.6	13.0	0.4	1.0	17.0	17.7	0.1	0.2	3.7	22.4	15.9	3.9	0.4	1.7

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PERMIT STATUS

This facility was regulated under a previously issued State Waste Discharge Permit (No. ST 6144) on June 29, 1995. This permit expired July 29, 2000, and has been temporarily extended until the date of issuance of this renewed Industrial State Waste Permit to land. The previous State Waste Discharge Permit authorized the application of wastewater to land so long as agronomic rates for nitrogen were not exceeded. The actual nitrogen agronomic rate was never numerically defined in the previous permit.

An application for permit renewal was submitted to the Department on January 31, 2000, and was accepted by the Department on August 1, 2000. An application addendum was submitted to the Department on September 24, 2004, and was accepted by the Department on October 11, 2004. A CAFO NPDES application was received on January 28, 2005, and was determined to be complete; however, the Department decided to issue a new individual permit due to the complexity of the facility.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received a complete compliance inspection on October 6, 2004. An inspection to observe the facility's groundwater sampling procedures was conducted on December 7, 2004, and February 22, 2006. An inspection to observe the facility's composting operation was conducted on May 18, 2005.

The facility has been in compliance with their previous State Waste Discharge Permit. However, there continues to be violations of the State's Groundwater Quality Standards. In light of the history of the site and the significantly worse condition of the groundwater quality in the past, the Department has elected to work with the facility to make further improvements instead of taking enforcement action at this time. It should be noted that this situation is extremely serious and the level of attention on the Department's end has been elevated to a high status of alert.

This facility has had ongoing issues with meeting nitrogen agronomic rates which has led to contamination of groundwaters for nitrate/nitrite, total dissolved solids, and total coliforms. Although many of the areas have improved dramatically, the groundwater quality has also alarmingly worsened in one particular area. The area of concern is located around the existing chicken manure composting operation. Groundwater quality around the composting operation has declined at an increasingly alarming rate starting from the time when the operation began.

The other land application areas have done significantly better since the first State Waste Discharge Permit has been issued. Nitrate/nitrite concentrations and total dissolved solids concentrations have dropped dramatically. This is attributed in large part to the end of the practice of directly land applying chicken manure to fields. However, in some fields the reduction in nitrate concentrations appear to have leveled off and it is apparent that more fine tuning is needed for continued improvement towards compliance with groundwater quality standards.

WASTEWATER CHARACTERIZATION

The proposed wastewater discharge is characterized for the following regulated parameters:

Table 2: Wastewater Characterization

Parameter	Concentration
pH	7.08 s.u.

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Parameter	Concentration
Conductivity	1.27 milliseimens/cm
Total Dissolved Solids (TDS)	1,089 mg/L
5-Day Biochemical Oxygen Demand (BOD ₅)	1,701 mg/L
Total Kjeldhal Nitrogen (TKN)	186 mg/L
Ammonia (NH ₃)	187 mg/L
Nitrate/Nitrite (NO ₃ /NO ₂)	4.5 mg/L
Total Coliform	Too Numerous to Count (TNTC)

The data used to summarize the facility's wastewater characterization is from the monthly submitted discharge monitoring reports (DMRs) from August 1995, through September 2005. The values reported in Table 2 are average concentrations/values of the reported sources and land application points.

As can be noticed in Table 2, the wastewater is of high strength in terms of conductivity, BOD₅, TDS, NH₃, TKN, and Total Coliform. Table 2 also shows that virtually all of the wastewater's TKN consists of NH₃ which means that there is a negligible amount of organic nitrogen in the wastewater. This is indicative of the high oxygen-demanding waste where any oxygen in NO_x compounds are stripped away very quickly. This Fact Sheet will evaluate the impacts of these pollutants upon the groundwater and provide a discussion for how the limits in the Permit were derived.

SEPA COMPLIANCE

This is an existing facility. There are no known State Environmental Policy Act (SEPA) compliance issues at this time. If there are any major modifications to the facility's handling of wastewater (i.e. a new treatment system), or any major structural additions, construction, etc, the Permittee is required to ensure that SEPA requirements are met and any additional permits necessary be secured.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard were determined by the Department through several different published studies, comparisons of other similar industrial facilities, and the site's specific hydrogeological characteristics. The agronomic rate limitation may be revised in the future as more data and site-specific analyses are done. The Department reserves the right to re-open this permit when the limitations no longer accurately reflect site-specific or waste discharge characteristics.

The permit includes limitations on the quantity and quality of the wastewater applied to the sprayfield that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

SURFACE WATER QUALITY LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the

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discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

The Permittee shall at no time be allowed to discharge any treated wastewater, stormwater and/or leachate and stormwater from the manure storage pad to surface waters of the State. The Permittee is required to abide by the required setbacks established in the permit to prevent potential runoff which may occur. Application of chicken manure is also required to meet the setback requirements established in the permit.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality groundwater. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 3: Ground Water Quality Criteria

Ground Water Parameter	Standard Concentration
Total Coliform Bacteria	1 colony/100 mL
Total Dissolved Solids (TDS)	500 mg/L
Chloride	250 mg/L
Nitrate as Nitrogen	10 mg/L
pH	6.5 to 8.5 s.u.
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

The Department has reviewed existing records and believes the Permittee's discharge has the potential to cause, and is causing, violations of the Ground Water Quality Standards. As a result, the Department has decided to address these issues by establishing the following: (1) corrective actions are to be taken to bring into compliance the chicken manure composting operations, (2) the land application of wastewater within acceptable nitrogen annual loading rates (lbs N/acre/year), and (3) to begin enforcing groundwater standards at currently uncontaminated monitoring wells with the objective of keeping these monitoring wells in compliance.

At no time shall the total load of nitrogen exceed the agronomic rates established in the permit.

The permit establishes a schedule for reducing the land applied agronomic rate and are shown on the next page. If the agronomic rate is exceeded in any individual land application field at any time, it shall be a violation of this Industrial State Waste Discharge Permit.

The groundwater limitations established in the permit are shown on the next page. Early warning values have been established to provide a system to identify and implement corrective measures if it appears that violations to the groundwater quality limits may occur.

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COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUSLY ISSUED PERMIT

The table below shows a comparison of the numerical effluent limits established in the previous permit with the limits established in this new permit.

<i>Land Application Limitations:</i>	
Existing Limits	Proposed Limits
<p><u><i>Total Nitrogen</i></u></p> <p>Qualitative limit was established which required the Permittee to meet agronomic rates for nitrogen.</p>	<p>Established an interim numerical agronomic rate of 600 lb-N/acre for grass and pasture and 200 lb-N/acre for corn which is effective May 1, 2006, to December 31, 2008.</p> <p>Established an interim numerical agronomic rate of 500 lb-N/acre for grass and pasture and 200 lb-N/acre for corn which is effective January 1, 2009, to December 31, 2009.</p> <p>Established a final numerical agronomic rate of 400 lb-N/acre for grass and pasture and 200 lb-N/acre for corn which is effective January 1, 2010, to April 30, 2011.</p> <p>These interim and final numerical agronomic rates are to be applied to each individual field versus being averaged across the entire application site.</p>

<i>Groundwater Limitations:</i>	
Existing Limits	Proposed Limits
<p><u><i>Total Dissolved Solids</i></u></p> <p>No limit was established in the previous permit.</p>	<p>A maximum daily limit of 500 mg/L and an early warning limit of 250 mg/L was placed on downgradient monitoring wells #3, 4, 7, and 14.</p>
<p><u><i>Total Coliform</i></u></p> <p>No limit was established in the previous permit.</p>	<p>A maximum daily limit of 1 CFU/100 mL was placed on downgradient monitoring wells #3, 4, 7, and 14.</p>
<p><u><i>NO₃/NO₂</i></u></p> <p>No limit was established in the previous permit.</p>	<p>A maximum daily limit of 10 mg/L and an early warning limit of 5 mg/L was placed on downgradient monitoring wells #3, 4, 7, and 14.</p>
<p><u><i>Chloride</i></u></p> <p>No limit was established in the previous permit.</p>	<p>A maximum daily limit of 250 mg/L and an early warning limit of 125 mg/L was placed on downgradient monitoring wells #3, 4, 7, and 14.</p>

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*.

WASTEWATER MONITORING

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Monitoring of wastewater is to be done monthly. Wastewater monitoring is necessary to determine the quality of wastewater being applied to land. Monitoring of effluent wastewater will be required at the “lagoon” effluent for flow applied to land, pH, BOD₅, TSS, TKN, NO₃/NO₂, NH₃, fats oil and greases, TDS, Chlorides, and total coliform.

GROUNDWATER MONITORING

The monitoring of groundwater at the site is required in accordance with the Groundwater Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has the potential to pollute and has already polluted the groundwater. Therefore the Permittee is required to evaluate the impacts on groundwater quality. Monitoring of the groundwater at the site boundaries and within the site is an integral component of such an evaluation. Monitoring of groundwater is to occur quarterly. Monitoring of groundwater shall include: water level, pH, temperature, dissolved oxygen, conductivity, ferrous iron, total coliform, dissolved organic carbon, TKN, NO₃/NO₂, Total iron, chloride, total dissolved solids, and manganese. Calcium, magnesium, potassium, sodium, sulfate, bicarbonate, and carbonate shall occur annually. Monitoring shall occur at all groundwater monitoring wells as shown in S2.B and as revised in the future by S9. and S10.

SOIL MONITORING

Monitoring of soil should be done for pH, conductivity, organic matter, moisture content, exchangeable sodium percentage, cation exchange capacity, sodium, calcium, magnesium, TKN, NO₃, Total P, Potassium, and Sulfate. Monitoring of soils shall be done once per year preferably after the growing season and, if possible, before the rainy season begins. The information collected will facilitate in assessing the health of the soils in order to make land application modifications to meet the agronomic rates and groundwater quality limitations as provided in Special Condition S1 of the accompanying Industrial State Waste Discharge Permit. The soils monitoring data shall be submitted to the Department as part of the annual Irrigation and Crop Management Plans.

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Information on infiltration capacity of the soil and crop water needs can be used to determine the optimum hydraulic loading that would provide the required water and nitrogen to the crops without causing flooding or leaching of nitrates, or causing odors.

CROP MONITORING

At harvest, the crop should be monitored for production (dry tons per acre), moisture content, TKN, TP, NO₃, Sodium, Magnesium, Potassium, and Calcium. Crops harvested must be removed from the land application site so that nitrogen in the crop is not returning back into the soil. The Permittee may conduct additional crop monitoring (such as WSU's monthly crop monitoring program) but must at all times conduct the minimum required monitoring per Special Condition S2.D. The crop monitoring data collected shall be submitted to the Department as part of the annual Irrigation and Crop Management Plans.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

IRRIGATION AND CROP MANAGEMENT PLANS

The irrigation and crop management plan is required to support the operations and maintenance manual and the groundwater sampling and analysis plan. The irrigation and crop management plan shall include a consideration of wastewater application at agronomic rates and should describe and evaluate various irrigation controls. Each plan should incorporate all data collected for the year in calculating a nitrogen budget and should be used to adjust any irrigation schedules in order to meet the agronomic rate limitation and the groundwater quality limitations.

OPERATIONS AND MAINTENANCE

The accompanying Industrial State Waste Discharge Permit contains Special Condition S4. as authorized under Chapter 173-240-150 WAC and Chapter 173-216-110 WAC. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. Proper review and update of the O&M Manual will help to minimize breaks in the distribution system's lines and will minimize any contamination of the groundwater monitoring wells. The permit requires submission of an updated O&M Manual for the entire wastewater system at least once per permit cycle.

GROUNDWATER MONITORING PLAN

A Groundwater Monitoring Plan shall be submitted to the Department in accordance with Special Condition S9. of the Industrial State Waste Discharge Permit. The plan shall include the Preliminary Report on Geology and Hydrogeology submitted August 19, 2005, as well as address the comments provided by the Department regarding this Preliminary Report. The Groundwater Monitoring Plan shall also provide a plan which outlines a modified groundwater monitoring regime where groundwater impacts can be measured directly downgradient of land applied fields. Both a representative upgradient and downgradient network shall be identified.

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ENGINEERING REPORT/FACILITY PLAN

An Engineering Report/Facility Plan shall be submitted to the Department in accordance with Special Condition S11. of the NPDES Permit if the conditions of S11. are met. The Report/Plan shall conform with WAC 173-240.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent an accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

SOLID WASTE CONTROL PLAN

The Department has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state. The plan must be submitted to the local permitting agency for approval, if necessary, and to the Department.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1. requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2. requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3. specifies conditions for modifying, suspending or terminating the permit. Condition G4. requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5. requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6. prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7. permit transfer. Condition G8 requires the payment of fees. Condition G9. describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for 5 years.

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This permit will be out of sync with the other permits in the South Puget Sound Basin Water Quality Management Area (WQMA). It has been the goal of the Southwest Regional Office to synchronize all permits in each WQMA to be renewed on a five-year rotating schedule. The reason for making an exception to the goal is to allow the Permittee a full five years to comply with the numerical agronomic rates established in the permit.

REFERENCES FOR TEXT AND APPENDICES

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Washington State Department of Ecology. Permit Writer's Manual. Publication Number 92-109. 1994.

Washington State University. Laboratory Procedures - Soil Testing Laboratory. 38 pp. November, 1981.

Washington State University. Post-Harvest Soil Nitrate Testing for Manured Cropping Systems West of the Cascades. Publication Number EM 8832-E. 16 pp. May 2003.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on October 15, 2004 in the *News Tribune* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on (date) in (name of publication) to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Industrial Unit Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30 day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6280, or by writing to the address listed above.

This permit was written by John Diamant, P.E.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7.0 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--RESPONSE TO COMMENTS

Comments regarding the State Waste Discharge Permit submitted by Kevin Hancock (Department of Ecology, Headquarters Office, Water Quality Program)

Comment 1:

Special Condition 1 of the permit:

Bring out in the 2nd paragraph that CAFO regulations require facilities to develop and implement an approved nutrient management plan.

It should be recommended the facility have a nutrient management plan that is developed by a certified nutrient management planner. After the plan is developed, it should be reviewed and approved by the Department of Agriculture Livestock Management Program. The CAFO Permit requires the plan be approved by the 'Department' which is the permitting agency. Any updates should also involve a planner and a Department of Agriculture Livestock Management Program review.

Response 1:

Comment has been considered and recommendations were incorporated into the permit.

Comment 2:

Special Condition 1.A of the permit:

The first paragraph Land Application Limitations gives the Permittee the authority to apply, 'treated wastewater, stormwater, and/or leachate to land via spray application'. In the second paragraph it is stated, 'land application of treated process wastewater, stormwater and/or leachate, *and compost, manure and/or litter* must be contained within a 100-foot setback. '.

I find this confusing because the 3rd paragraph expands the materials that can be land applied without explanation.

Response 2:

We agree with your comment and the following action has been taken: Under Special Condition S1.A., in the third paragraph, the text "..., and compost, manure and/or litter..." has been deleted from the permit. It is the intention of this permit that compost, manure and/or litter be covered under a separate CAFO waste discharge permit.

Comment 3:

Special Condition 1.B of the permit:

This section states the Permittee must, 'only apply manure, litter and process wastewater to lands as specified by a Comprehensive Waste Management Plan.

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I recommend this be changed to state, 'apply manure, litter and process wastewater to lands as specified in their approved *Nutrient Management Plan*.

A good nutrient management plan will encompass both nutrient management, and crop management for the protections of waters of the state. Having experienced oversight of the nutrient and crop management will go a long way toward compliance...

Throughout the permit, any reference to a *solid waste control* should be changed to reference their approved nutrient management plan.

Response 3:

We agree with your comment and the following actions have been taken: Under Special Condition S1.B, the first paragraph has been revised. Manure and litter is not covered under this permit and has been deleted. "process wastewater" has been revised to specify, in more detail, what wastes this comprises of.

Under Special Condition S5, reference has been made to ensure coordination between the Solid Waste Control Plan and the Nutrient Management Plan (as required by the CAFO permit).

Comments regarding the State Waste Discharge Permit submitted by Wilcox Farms, Inc.

Comment 4a:

Page 4 of the permit

RE: Submittal Date for (S7) Annual Irrigation and Crop Mgmt Plan

Submittal Date is December 31 each year.

Comment: The period for data collection is December 31st. The date should be at least January 31, following the data collection year since some soil and wastewater sample results are usually not received by the end of the data collection period. In addition, considerable time and effort is required to prepare the annual report. Currently Ecology gives the farm until the end of February to submit the report. Since Ecology found it necessary to extend the date to the February submittal date in the past, it seems only reasonable to begin the new permit where it left off in the past since nothing in this regard has changed.

Response 4a:

Comment has been considered and the recommendation to extend this submittal date to January 31st has been made. The Department does not agree that two whole months are needed to finish getting data and compiling the report. The report is crucial in managing land application in each agronomic management unit and should be available for guidance for land application in the following year as soon as possible.

Comment 4b:

RE: Submittal Date for (S9) Draft Groundwater Monitoring Plan

Submittal Date is June 30, 2006

Comment: The Work Plan has the Final Hydro-Geo Report submittal date of July 28 and Submittal Date for the Groundwater Monitoring Plan submittal date of August 31. If the work plan is to be modified Ecology needs to contact us.

Response 4b:

Comment has been considered and the Department agrees to synchronize the submittal date of the Final Hydro-Geo Report/Draft Groundwater Monitoring Plan with the submittal date contained in an agreed Work Plan schedule dated March 21, 2006. The Work Plan was reviewed and approved by the Department and provides the plan to conduct the work, leading up to, as well as, installing additional monitoring wells.

Comment 5:

Page 5 of the permit;

RE: S1. A. Sources of nutrients and wastewater constituents.

Comment: Poultry manure, cattle manure and machinery-rinse-water from manure and compost and dead animal operations are also included.

Response 5:

Comment has been noted. The Department disagrees with the suggestion that poultry manure, poultry manure-equipment wash-down water, and/or dead poultry wastes be included as coverage in this permit. The handling and land application of poultry manure and manure-related wastes are covered under Concentrated Animal Feeding Operations (CAFO) regulations as mandated by EPA. A separate CAFO discharge permit is required if these wastes are to be land applied and enter either surface waters or groundwaters of the state.

Coverage for disposing of wastes from cow manure, cow manure-equipment wash-down water, cow manure compost, and dead cows will also not be covered in this industrial state waste discharge permit. The Department understands that there are future plans for the site which include raising a few hundred head of organic milking cows. This is based on information from the Tacoma News Tribune dated April 14, 2006, which states: "The family wants to bring a few hundred organic cows onto the pastures at the Roy farm in the near future to begin production of organic dairy products." Please note, any number of milking cows between the range of 200-999 fall into the medium CAFO facility designation. An effective CAFO permit is required before these wastes can be land applied or discharged. It is recommended that the CAFO permit application be submitted at least 180 days before the organic milk operation begins or before the organic cows begin to reside and graze on the farm. Any unauthorized land application/discharges mentioned above, without CAFO permit coverage, will be considered a violation of this proposed individual, industrial state waste discharge permit (Permit No. ST 6144).

Dead poultry and dead cattle/cows must be disposed of in accordance with solid waste rules, as well as, animal health and state and local health rules. As such, the disposal methods for these carcasses are not authorized in this industrial state waste discharge permit.

Clarification has been made in the proposed industrial state waste discharge permit by adding Special Condition S13. which requires the Permittee to apply for CAFO permit coverage for poultry manure/cattle/cow manure, machinery-rinse-water from manure wastestreams.

Comment 6:

Page 5 of the permit;

RE: S1. A. "Agronomic Rate Limit Schedule" Tabled value for January 1, 2010, to April 30, 2011, is 400 lb-N/acre for Grass and Pasture.

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Comment: Professor Steve Fransen, WSU Agronomist recommendation is approximately 450 lbs/acre. His recommendation is based upon research, professional literature and professional experience. We have asked for the same documentation from Ecology and received only “We think this is a good value.” We suggest changing the value to something professionally and scientifically defensible rather than arbitrarily and perhaps capriciously setting a value that may have adverse economic impacts on farming and agri-business.

Response 6:

Comment has been noted. The Department has requested to obtain access to the technical research and calculations for which the 450 lbs of N/acre/year that Steve Fransen developed was based upon. This was never submitted to the Department for consideration.

The Department reviewed the original agronomic rates developed in the Comprehensive Waste Management Plan. The Department notes that Steve Fransen was one of the individuals who have worked on this Plan at the time. The rates developed at that time were established in the range of 300-400 lbs of N/acre/year. In good faith and understanding the huge reductions in wasteloads Wilcox was achieving, the complex nature of hydrogeology of the area, and the hardships imposed to the facility, the Department had agreed with the Permittee that a target of 600 lbs of N/acre/year would be acceptable during the previous permit cycle. This was a significant improvement to the original estimated loading rate of 1,200 lbs of N/acre/year before this facility was regulated under the permitting program.

Currently, both the Department of Ecology and the Department of Agriculture finds that even the proposed final limit of 400 lbs of N/acre/year for grass and pasture (in this permit) to be fairly high and on the borderline of being acceptable of good management practices. In light of this, the Department of Ecology still recognizes the huge reductions in wasteloads Wilcox has already achieved, the complex nature of hydrogeology of the area, and the challenges the facility is faced with. As a result, the Department of Ecology has decided not to reduce the agronomic rate limit below 400 lbs of N/acre/year during the proposed next permit cycle.

In response to the Permittee’s comment which is to obtain some additional relief from the agronomic rate limit, the Department of Ecology is proposing a revised schedule for meeting the 400 lbs of N/acre/year which essentially provides four years in which the facility must reduce the rates from 600 to 400 lbs of N/acre/year. This will provide some additional time and “breathing room” to prepare for further reductions of this agronomic rate which may be required in the future.

There are currently two facilities in the State managed by the southwest regional office at the Department. These facilities have been identified as requiring numerical agronomic rate limitations due to total maximum daily load (TMDL) issues, groundwater contamination issues, and/or permit implementation issues. The rates at these two facilities are 150 and 200 lbs of N/acre/year, respectively. These rates were established based on a number of factors which include; site specific conditions, AKART, type of waste, location of site, groundwater hydrogeology and geology. The Department has spent a considerable amount of time and resources on this permit renewal and has continued to be willing to work with the Permittee to make improvements.

Comment 7:

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RE: S2. A. “Wastewater Monitoring” The table states monthly monitoring.

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WILCOX FARMS, INC.*

Comment: The frequency should be clarified to read “monthly during the land application season.” Note: additional monitoring will be required at other times should the farm considered additional (engineered) treatment of wastewater.

Response 7:

Comment has been considered. The Department disagrees that any clarification needs to be made here. It has been past protocol to state there is “no discharge” on the DMRs if no discharge occurs. In the future, if additional treatment of wastewater is implemented or a different waste handling scenario develops, the permit and fact sheet will be modified to reflect these changes.

Comment 8:

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RE: S2. C. “Soil Monitoring” The first paragraph states “irrigation” lands.

Comment: This is an Industrial Waste Discharge Permit and the sentence should be changed to lands receiving wastewater, or something similar. The term irrigation is too broad.

Response 8:

Comment was considered and the recommended clarification was made.

Comment 9:

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RE: S2. C. “Soil Monitoring” The soil monitoring section attempts to set forth a sampling plan. Specifying the number of samples per field and where to take the samples, sampling depth, how many duplicates to be included in the composite, etc.

Comment: Presently we employ a sampling plan prepared in conjunction with WSU. This plan is based upon science, experience and professional judgment. It is also more rigorous and defensible than proposed by Ecology. We would suggest the existing sampling plan be employed so the data can be compared with historical sampling data. The present plan samples 0-12 and 12-24 inches so the nitrogen soil bank is monitored for long-term effectiveness in reducing accumulated nutrients (e.g.: nitrogen and phosphorous). It would be less protective of the environment to not follow existing practice. We would suggest Ecology, at the very least; add a soil monitoring plan to the deliverables in the form of an SOP.

Response 9:

Comment was considered and the recommendation was made.

Comment 10:

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*FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST 6144
WILCOX FARMS, INC.*

RE: S2. C. “Soil Monitoring” The tabled parameter for phosphorous is stated as, “Total-P (as P).”

Comment: This is not consistent with commonly observed sampling and analysis procedures used in the environmental sciences, other than, perhaps for a hazardous waste investigation. The procedure proposed by NRCS in their Phosphorous Index to be used to assess crop available P and P that leach into groundwater is the Bray, Morgan or (less often west of the Rocky Mountains, Mehlich or Olsen). WSU and SoilTest Laboratories in Moses Lake suggest the Bray test and this is what has historically been used. Assessing total P will yield a huge number (>10,000 ppm on the Wilcox soils) and will not provide any meaningful management guidance. I am enclosing a link for your information:

<ftp://ftp-fc.sc.egov.usda.gov/IA/technical/BackgroundBasics.pdf>

Response 10:

Comment has been considered. The Department agrees that monitoring total phosphorus would not provide very meaningful results. However, monitoring for phosphorus is an important tool for managing surface water quality and preventing eutrophication. Therefore, the Department has modified the total phosphorus parameter to soluble reactive phosphorus (SRP, or PO₄). This would also provide continuity with the previous permit’s requirement to monitor for PO₄.

The phosphorus monitoring requirement does not result in the need to calculate a phosphorus index at this time. The objective of this State Waste Discharge Permit is to track concentrations of phosphorus in the soil. The CAFO permit may require the calculation of a phosphorus index and those requirements will need to be met separately for compliance with the CAFO permit.

Comment 11:

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RE: S7. ¶1. With reference the annual Irrigation and Crop Management Plan, “The plan must be prepared by a soil scientist.”

Comment: Presently the annual report has been prepared by a team of agronomists, geologists and environmental scientist. This, we believe, has resulted in a thorough and defensible report. Over the past 10 years of the permit not one “soil scientist” from Ecology has been actively involved in permit formulation, management or compliance. It seems arbitrary to switch teams at this point. If we think the effort requires the professional input of a soil scientist we have in the past brought one on-board. We would therefore suggest that, since this is a farm, any reference to a preparer be “Agronomist.” The definition in the Fact Sheet for soil scientist is actually so broad and nebulous that it could be left out altogether and nothing, in our estimation, would be lost in the quality of the document.

Response 11:

Comment was considered and the recommended clarification was made. However, the definition in the fact sheet for soil scientist was left unchanged.

Comment 12:

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RE: S7. 2. Calculated balances for total nitrogen, nitrate/nitrite, TKN, TDS and chloride.

Comment: Calculated balances for these are not possible at this facility because there is no way to measure the amounts of these nutrients removed from the system. This is not a cropping operation (e.g.: tons of hay or bushels of corn). The plant nutrients are removed by grazing animals and the animals are removed and added throughout the grazing season. The animals are not weighed-on or weighed-off the farm and they are various ages! This is not a realistic expectation or regulatory requirement.

Response 12:

Comment has been noted. The nutrient balances may be successfully completed by making reasonable assumptions during calculations. The Department does not expect the calculations to be made using detailed, exhaustive data. Any reasonable assumptions used should be explained and submitted to the Department along with the Annual Crop and Irrigation Plan. Any assumptions used should be fairly conservative and should be based on published guides and/or research papers. For example, the nitrogen removed by grazing may be approximately 2/3 of the nitrogen taken up by the crop. This value may need to be adjusted based on operational factors such as grazing rotations in fields, how much nitrogen has been applied, etc. No changes were made to the permit or fact sheet.

Comment 13:

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RE: S9. 2. Final Hydrogeological Report and Groundwater Monitoring Plan.

Comment: Please refer to the Work Plan we are presently working under, its schedule and Comment 1), above.

Response 13:

Comment has been considered and the Department agrees to synchronize the submittal date of the Final Hydro-Geo Report/Draft Groundwater Monitoring Plan with the submittal date contained in an agreed Work Plan schedule dated March 21, 2006. The Work Plan was reviewed and approved by the Department and provides the plan to conduct the work, leading up to, as well as, installing additional monitoring wells.

Comment 14:

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RE: S11. Engineering Report (Facility Plan). The statement, "if the final agronomic rate limit of 400 lbs N/acre/year...in any land application unit"

Comment: The 400 lbs-N/acre/year is crop-specific, is not in effect until January 2010, and is not consistent with best agronomic practices of the WSU Agronomy Program. A value for Grass Forage Crops in Western Washington of 450 lbs/acre is more in line with their guidance. The requirement for an "Engineering Study" to look at potential treatment options should be tied to the application limit schedule. If Ecology wants to

assess progress based upon their schedule, then it should be tied to the 600 lbs-N limit of 2008, and/or 500 lbs-N limit of 2009, and/or the 450 lbs-N limit of 2011.

Response 14:

Comment has been considered. The Department agrees that the timing and the triggering need for completing the Engineering Report/Facility Plan was not clearly defined. Special Condition S11 has been revised to clarify when an Engineering Report/Facility would be needed and when it should be submitted.

Comments regarding the Fact Sheet submitted by Wilcox Farms, Inc.

Comment 15:

Page 4 Poultry and Egg Production

RE: The types of poultry raising facilities.

Comment: The farm also raises range-free poultry.

Response 15:

Comment has been considered and the recommended clarification was made.

Comment 16:

Page 6 Chicken Manure Composting Unit

RE: “The farm previously operated...”

Comment: The farm currently operates a composting unit, but is in the process of considerably decreasing their level of effort in this area. Much of the compost facility will be decommissioned and converted to a raw manure handling facility. The latter will be used to store and ship raw manure to organic farming operations east of the Cascade Mountains.

Response 15:

Comment has been considered and the recommended clarification was made.

Comment 16:

Page 6 Vehicle Maintenance Operations

RE: “The farm has a vehicle repair and maintenance shop ...”

Comment: The farm contracts with an independent vehicle leasing, maintenance and repair company (Penske) for operation and maintenance of its Fleet. The farm contracts with another company for vehicle fueling and yet another firm for vehicle washing.

Response 16:

Comment has been considered and the recommended clarifications were made by inserting a new paragraph.

Comment 17:

Page 7 TREATMENT PROCESSES

RE: "...all nutrients ... are transported to ... a 33 million gallon lined, main holding lagoon. The main lagoon is a concrete, lined..."

Comment: Nope. It is plastic lined.

Response 17:

Comment was considered and the recommended clarification was made.

Comment 18:

Page 7 TREATMENT PROCESSES

RE: "Some biological treatment is undoubtedly occurring in the surge pond and in the lagoon but there is no measure of how much."

Comment: First, Engineering studies have been done in the past on nitrogen and sulfur. We know where we were with the wastewater before and after installation of eight, not six large aeration units at the main lagoon. We also have done analysis of the effects of removing solid crust material builds-up on the surface during certain climatic conditions. The constraining variables are money (\$\$) and time. If the limits which will eventually be agreed to cannot be met by means of management then additional means will be found to deal with the problem. These are not limited to preparing engineering reports; but may also include changing the cropping and agricultural regime...or going out of business.

Response 18:

Comment was considered and noted.

It is not the Department's intention to make any industry go out of business. However, the Department must ensure that both Groundwater Quality Standards and Surface Water Quality Standards are met. The Department hopes to work with any facility to meet the challenges involved with complying with these standards. When standards cannot be met, the Department will work with Permittees to try to find the most cost-effective alternative with the least impact to the Permittee.